

We claim:

- 1        1. An article comprising a tunable filter, the tunable filter comprising:  
2        an optical cavity having a length that is determinative of a center transmission  
3               wavelength of a passband of said tunable filter;  
4        a tuning device operative to change said length of said optical cavity; and  
5        a filter-disabling means operative to disrupt a finesse of said optical cavity.
- 1        2. The article of claim 1 further comprising:  
2        a first filter input for receiving a multiplexed optical signal having a plurality of spectral  
3               channels and delivering it to said optical cavity;  
4        a first filter output for receiving at least one of said spectral channels from said optical  
5               cavity, wherein said received spectral channel is within said passband of said  
6               tunable filter.
- 1        3. The article of claim 2, further comprising:  
2        a first waveguide in optical communication with said first filter input; and  
3        a second waveguide in optical communication with said first filter output.
- 1        4. The article of claim 3 further comprising:  
2        a plurality of transmitters for generating a plurality of optical signals;  
3        a multiplexer for multiplexing said optical signals into said multiplexed optical signal,  
4               said optical signals defining said spectral channels thereof;  
5        a node comprising said tunable filter and a subscriber terminal, wherein said subscriber  
6               terminal is in optical communication with said second waveguide and is  
7               operable to receive said spectral channel therefrom; and  
8        an optical fiber for transmitting said multiplexed optical signal to said node, wherein said  
9               first waveguide is in optical communication with said optical fiber via said  
10              node.
- 1        5. The article of claim 1 wherein said optical cavity is defined by first and second  
2               spaced mirrors.

1       6.     The article of claim 5 wherein said first mirror is movable, and further wherein  
2        said tuning device comprises said first mirror.

1       7.     The article of claim 6 wherein said filter-disabling device comprises said first  
2        mirror.

1       8.     The article of claim 7 wherein said first mirror is operative to tilt.

1       9.     The article of claim 8 wherein said first mirror comprises:  
2        a layer suspended over a substrate;  
3        a dielectric mirror disposed on said layer; and  
4        two individually-addressable electrically-conductive electrodes.

1       10.    The article of claim 7 wherein said first mirror is bifurcated into an upper layer  
2        and a lower layer, wherein:

3        said upper layer and said lower layer are spaced from one another defining an  
4        auxiliary gap; and  
5        said upper layer and said lower layer are movable.

1       11.    The article of claim 10 wherein:  
2        said upper layer and said lower layer each comprise at least one layer of material; and  
3        said one layer of material has a thickness that is an odd-multiple of an eighth of  
4        an operating wavelength of said tunable filter.

1       12.    The article of claim 6 wherein said filter-disabling device comprises electrically-  
2        switched media selected from the group consisting of absorbing media, scattering media  
3        and depolarizing media.

1       13.    The article of claim 12, wherein said electrically-switched absorbing media is a  
2        quantum well modulator.

1       14.    The article of claim 1 wherein:  
2        said optical cavity comprises a ring resonator;  
3        said tuning device comprises an adjustable delay device operative to change a length of  
4            said optical cavity; and  
5        said filter-disabling device is an adjustable loss device characterized by a  
6            transmissibility that varies with applied current.

1       15.    The article of claim 14 wherein:  
2        said filter-disabling device comprises a semiconductor optical amplifier that is disposed  
3            in said ring resonator.

1       16.    A method comprising:  
2        disrupting finesse of a tunable filter;  
3        tuning said tunable filter to a desired center transmission wavelength; and  
4        recovering said finesse of said tunable filter.

1       17.    The method of claim 16 wherein said filter has two spaced mirrors in parallel  
2            relation to one another, said two mirrors defining an optical cavity, wherein:  
3            the step of tuning comprises changing a length of said optical cavity.

1       18.    The method of claim 17 wherein said step of tuning further comprises moving at  
2            least one of said two mirrors to change said length of said optical cavity.

1       19.    The method of claim 17 wherein the step of disrupting finesse comprises tilting  
2            one of said two mirrors so that said two mirrors are not in parallel relation to one another.

1       20.    The method of claim 17 wherein:  
2        one of said mirrors is bifurcated so that a gap is defined within the bifurcated mirror;  
3        when said filter is not being tuned, said gap has a first size that provides a first finesse  
4            suitable for transmitting said center transmission wavelength through said  
5            tunable filter;  
6        the step of disrupting finesse comprises changing said first size of said gap to provide a  
7            second finesse that is unsuitable for transmitting said center transmission  
8            wavelength through said tunable filter.

1       21. The method of claim 17 wherein:  
2       an electrically-switched media selected from the group consisting of absorbing media,  
3                   scattering media and depolarizing media is disposed in said optical cavity;  
4       when said filter is not being tuned, said electrically-switched media is transmissible at  
5                   operating wavelengths of said filter;  
6       said step of disrupting finesse comprises electrically switching said electrically-  
7                   switched media so that it is non-transmissible at said operating  
8                   wavelengths of said filter.

1       22. The method of claim 16 wherein:  
2       said filter comprises a ring resonator having an in-line semiconductor optical amplifier;  
3       when said filter is not being tuned, said semiconductor optical amplifier is transmissible  
4                   at operating wavelengths of said filter;  
5       said step of tuning comprises changing an effective length of said ring resonator; and  
6       said step of disrupting finesse comprises changing operation of said semiconductor  
7                   optical amplifier so that it is non-transmissible at operating wavelengths of said  
8                   filter.